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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/457,208	12/07/1999	MARUTHI BHASKAR	CISCP127	7417

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EXAMINER	
SHAH, CHIRAG G	

ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/457,208	BHASKAR, MARUTHI	
	Examiner	Art Unit	
	Chirag G Shah	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/11/2004* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23,27-38,42 and 46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *24-26,39-41,43-45 and 47* is/are allowed.

6)☒ Claim(s) *1-23,27-38,42 and 46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-6, 11-16, 21, 29-33, and 46 rejected under 35 U.S.C. 103(a) as being unpatentable over Ruszczyk (U.S. Patent No. 6,205,150) in view of Yin (U.S. Patent No. 5,926,458), and further in view of Ayres (U.S. Patent No. 6,597,699).

Referring to claims 1, 2, 11, 12, 21, 29 and 46, Ruszczyk discloses a method of scheduling higher and lower priority data packets. Ruszczyk discloses in figure 4 and respective portions of the specification of receiving a plurality of packets into a selected ingress router, each packet belongs to (either a high priority queue or low priority queue) a selected one of a plurality of service classes and the packets being transmitted to a particular destination. Ruszczyk further teaches in column to lines 10-60 and figure 4 and respective portions of the specification that data packets at various data rates or bandwidth class of service are sent from any or all of CPE. The routers place data packets into combination queues. Once the sorter places data packets in a higher priority or lower priority queue, the router schedules the data packets to be transmitted for execution. Ruszczyk further discloses in figure 3 that the router periodically monitors a combination queue for the presence of data packets for transmission. However, Ruszczyk fails to explicitly disclose of metering a load value for each service class, the load value indicating a

number count of streams for each service class and the particular destination of at least one of the packets and periodically transmitting one or more tickets to the destination to indicate the load value for each of the one or more service class. Yin discloses in the abstract and in figure 2, column 4, lines 18-64 where queues 46-52 (although four queues are shown in figure 2, note, a particular router or network communication device may contain any number of queues) receives plurality of data packet (streams) and communication link 56 provides queue status information (thus, each queue meters the respective load value for the queue, the load value corresponds to total number of packets (streams are inclusive of total number of packets) for the class) from queues to packet scheduler 28 (destination). The queue status information transmitted (periodically transmits one ticket via a queue status information message to the scheduler-destination to indicate the load value of each of the classes) on communication link 56 may include the size of the packet at the head of each (class) queue (i.e. the next packet in the queue to be transmitted) and information indicating whether a particular queue (load) full or empty. Communication line 56 is coupled to each queue 46-52 in outgoing buffer 24 such that the various queue status information is communicated from each queue 46-52 to packet scheduler 28. Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Ruszczyk to include metering load value and transmitting the status to the destination as disclosed by Yin in order to enhance scheduling, thus allocating bandwidth with respect to multiple service queues more efficiently and reliably. Ruszczyk in view of Yin discloses in figure 2 and column 4, lines 18-64 that the queue status information transmitted on communication link 56 may include the size of the packet at the head of each queue and information indicating whether a particular queue is full or empty such that the various queue

status information is communicated from each queue 46-52 to packet scheduler 28. However, Ruszczyk in view of Yin fails to explicitly disclose that the load value indicates a number count of streams for each service class. Ayres discloses in figures 2, 3 and column 6 to column 7, lines 39 that the data fields in the data queue head structure 55 includes a "queue-count" field 58 having a value indicating the number of packets presently held in the respective data queue. Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Ruszczyk in view of Yin to include "queue count" field as a part of the queue status information being transmitted as taught by Ayres such that "queue-count" field enables performing several tasks including monitoring and adjusting the flow rate and usage to ensure overall system stability of the router and the network even when heavy loads occur.

Referring to claims 3-6, 13-16, and 30-33, Ruszczyk discloses a method of scheduling higher and lower priority data packets. Ruszczyk discloses in figure 4 and respective portions of the specification of receiving a plurality of packets into a selected ingress router, each packet belongs to (either a high priority queue or low priority queue) a selected one of a plurality of service classes and the packets being transmitted to a particular destination. Ruszczyk further teaches in column to lines 10-60 and figure 4 and respective portions of the specification that data packets at various data rates or bandwidth class of service are sent from any or all of CPE. The routers place data packets into combination queues. Once the sorter places data packets in a higher priority or lower priority queue, the router schedules the data packets to be transmitted for execution. Ruszczyk further discloses in figure 3 that the router periodically monitors a combination queue for the presence of data packets for transmission. Ruszczyk fails to disclose of one or more tickets (or each ticket) indicate a total number count of streams (or a single

stream) for each class (or particular class) that is being transmitted to the destination (same). The queue status information transmitted (periodically transmits one ticket via a queue status information message to the scheduler-destination to indicate the load value of each of the classes) on communication link 56 may include the size of the packet at the head of each (class) queue (i.e. the next packet in the queue to be transmitted) and information indicating whether a particular queue (load) full or empty. Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Ruszczyk to include transmitting the status to the destination as disclosed by Yin in order to allocate bandwidth with respect to multiple service class queues more efficiently and reliably.

3. Claims 7-10, 17-20, and 34-37 rejected under 35 U.S.C. 103(a) as being unpatentable over Ruszczyk and Yin in view of Ayres as applied to claim 1-6, 11-16, 21, 29-33, and 46 and further in view Yin et al (U.S. Patent No. 6,442,138).

Referring to claims 7-10, 17-20, and 34-37, Ruszczyk and Yin in view of Ayres disclose of sending one or more tickets to a router reserving certain service features of the network and signal that a number of packets will follow this same path. Ruszczyk and Yin in view of Ayres also disclose that based on the information (via status message with respect to load sized of queues), the packet scheduler determines which queue will be services next. Ruszczyk and Yin in view of Ayres fails to disclose that the selected core router is configured to allow the selected core router to dynamically allocate resource based on the current load of each class. Yin et al teaches of a system that determines the allocated bandwidth for the specified class of service. Yin discloses in figure 1, column 3, lines 65 to column 2, lines 13 of providing dynamic

allocation of bandwidth resources, adapting to changing network configurations and changing network traffic. As the bandwidth allocation is modified or updated by the CAC, a corresponding signal is provided to queue scheduler to adjust the manner in which queue are serviced by queue selector. Thus, implying one or more tickets are only transmitted (after a elapsed, predetermined time) for a particular class when the load value has changed for such service class. In addition to what Yin et al. discloses in figure 1, column 3, lines 65 to column 2, lines 13, Yin et al further discloses in column 6 lines 1 to column 7 lines 61 that the node or router is configured to allow the node to dynamically allocate resources based on the current load of each class and the tickets facilitate assured forward routing service performed by the core router. Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Ruszczyk and Yin in view of Ayres to include the teachings of Yin et al. in order to ensure maximum utilization of the available bandwidth.

4. Claims 22, 23, 27, 28, 38, and 42 rejected under 35 U.S.C. 103(a) as being unpatentable over Ruszczyk and Yin and in view of Yin et al. (U.S. Patent No. 6,442,138) further in view of Ayres (U.S. Patent No. 6,597,699).

Referring to claims 22, 23, 27, 28, 38, and 42, Ruszczyk discloses a method of scheduling higher and lower priority data packets. Ruszczyk discloses in figure 4 and respective portions of the specification of receiving a plurality of packets into a selected ingress router, each packet belongs to (either a high priority queue or low priority queue) a selected one of a plurality of service classes and the packets being transmitted to a particular destination. Ruszczyk further teaches in column to lines 10-60 and figure 4 and respective portions of the specification that

data packets at various data rates or bandwidth class of service are sent from any or all of CPE. The routers place data packets into combination queues. Once the sorter places data packets in a higher priority or lower priority queue, the router schedules the data packets to be transmitted for execution. Ruszczyk further discloses in figure 3 that the router periodically monitors a combination queue for the presence of data packets for transmission. However, Ruszczyk fails to explicitly disclose of metering a load value for each service class and the particular destination of at least one of the packets and periodically transmitting one or more tickets to the destination to indicate the load value for each of the one or more service class. Yin discloses in the abstract and in figure 2, column 4, lines 18-64 where queues 46-52 (although four queues are shown in figure 2, note, a particular router or network communication device may contain any number of queues) receives plurality of data packet (streams) and communication link 56 provides queue status information (thus, each queue meters the respective load value for the queue, the load value corresponds to number of packets (streams) for the class) form queues to packet scheduler 28 (destination). The queue status information transmitted (periodically transmits one ticket via a queue status information message to the scheduler-destination to indicate the load value of each of the classes) on communication link 56 may include the size of the packet at the head of each (class) queue (i.e. the next packet in the queue to be transmitted) and information indicating whether a particular queue (load) full or empty. Communication line 56 is coupled to each queue 46-52 in outgoing buffer 24 such that the various queue status information is communicated from each queue 46-52 to packet scheduler 28. Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Ruszczyk to include metering load value and transmitting the status to the destination as disclosed by Yin in order to

enhance scheduling, thus allocating bandwidth with respect to multiple service queues more efficiently and reliably. Ruszczyk in view of Yin disclose of sending one or more tickets to a router reserving certain service features of the network and signal that a number of packets will follow this same path. Ruszczyk in view of Yin fails to disclose that the selected core router is configured to allow the selected core router to dynamically allocate resource based on the current load of each class. Yin et al. teaches of a system that determines the allocated bandwidth for the specified class of service. Yin et al. discloses in figure 1, column 3, lines 65 to column 2, lines 13 of providing dynamic allocation of bandwidth resources, adapting to changing network configurations and changing network traffic. As the bandwidth allocation is modified or updated by the CAC, a corresponding signal is provided to queue scheduler to adjust the manner in which queue are serviced by queue selector. Thus, implying one or more tickets are only transmitted (after a elapsed, predetermined time) for a particular class when the load value has changed for such service class. In addition to what Yin et al. discloses in figure 1, column 3, lines 65 to column 2, lines 13, Yin et al. further discloses in column 6 lines 1 to column 7 lines 61 that the node or router is configured to allow the node to dynamically allocate resources based on the current load of each class and the tickets facilitate assured forward routing service performed by the core router. Therefore, it would have been obvious to one of ordinary skill in the art to modify the teaching of Ruszczyk in view of Yin to include the teachings of Yin et al. in order to ensure maximum utilization of the available bandwidth. However, Ruszczyk and Yin in view of Yin et al fails to explicitly disclose that the load value indicates a number count of streams for each service class. Ayres discloses in figures 2, 3 and column 6 to column 7, lines 39 that the data fields in the data queue head structure 55 includes a "queue-count" field 58 having a value

indicating the number of packets presently held in the respective data queue. Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Ruszczyk and Yin in view of Yin et al .to include "queue count" field as a part of the queue status information being transmitted as taught by Ayres such that "queue-count" field enables performing several tasks including monitoring and adjusting the flow rate and usage to ensure overall system stability of the router and the network even when heavy loads occur.

Allowable Subject Matter

5. Claims 24-26, 39-41, 43-45 and 47 allowed.

Response to Amendment

Applicant's arguments filed 11/11/2004 have been fully considered but they are not persuasive.

Referring to claims 1, 11, 21, 22, 27, 28 and 46, Applicant provides the Examiner's interpretation with respect to Ayres reference specifically in that the load value based on "queue-count" filed 58 indicates the number of packets presently held in the respective data queue. Applicant further submits that Ayres merely discloses a number count of packets, not a number count of streams. Examiner respectfully disagrees with Applicant for several reasons and redirects Applicant to the claim language, specification and Ayres reference. First reason is the amount of load that represents the plurality of packets per class and the total number of streams per class provides the same information with respect to the number (count) of total packets. This is the case, since total count of packets per class equals the total number of packets within the total number of streams. In other words, since each ticket provides the amount of load for a

particular class, the load with respect to plurality of packets for a particular class does not change whether total streams (count) of packets are being sent or total count of packets are being sent. Another reason is that a ticket representing the total number of packets enables the core router as specified in the specification on page 11 to utilize the load information to determine/verify the number of packets to send to a particular egress router. Thus, by providing stream count, which is inclusive of total packet count, does not change the load count of total packets per class being sent by tickets. Therefore, based on the reasons above in addition to the art rejection, the respective claims are not patentably distinct from Ruszczyk, Yin, and Ayres and thus, remain rejected.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Or faxed to:

(703)305-3988, (for formal communications intended for entry)

Or:

(703)305-3988 (for informal or draft communications, please label "Proposed" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chirag G Shah whose telephone number is 571-272-3144. The examiner can normally be reached on M-F 6:45 to 4:15, 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cgs
January 11, 2005

Ajit Patel
Primary Examiner